

Questions in Neuroanatomy

Course 202 Medicine (Anat 202)

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محلولة كامل

These are objective questions especially prepared to function as a guide to study anatomy in a better and critical way. These are also meant to be examples for questions that may be encountered in the assessment, midterm and final anatomy exams. All the "true - false" questions are presented here as only true statements. However, any of these statements can be made false by just changing one or more words.

Students should answer these objective questions and present their written answers to the staff of the department by the end of the course to be evaluated.

It is to be noted that, in addition to the objective questions, all the anatomy exams will include short or/and long essay questions.

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Unit (1): Spinal cord

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Unit (7): Arteries of the brain

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★ مع سلاسل الحجاب الحنا ★

Unit (1)

Spinal Cord

True statements:

1. The cervical enlargement reached maximum diameter at the 6th cervical vertebra.
2. The lumbar enlargement is of maximum size opposite the 12th thoracic vertebra.
3. The average length of the spinal cord is 45 cm.
4. The spinal cord ends at the level of the disc between L. 1 & L. 2 vertebrae.
5. The conical lower end of the spinal cord is called conus medullaris.

Complete:

- The filament extending from the apex of the conus medullaris to the coccyx is called the filum terminale
- The cauda equine is formed by the roots of the lumbar, sacral & coccygeal nerves.
- The radicular arteries pass along the roots of the spinal nerves.
- The anterior & posterior spinal arteries arise from the vertebral artery.
- The meningeal space outside the dura mater is the epidural "Extradural" space.
- A sample of C.S.F. can be obtained from the subarachnoid space of the spinal cord by a process called lumbar puncture

Matching:

A) Meningeal layers:

- | | | |
|-----------------------|--------------------|--------------|
| 1. dura mater | 2. arachnoid mater | 3. pia mater |
| 4. subarachnoid space | 5. epidural space | |

B) Features:

- most tough (1)
- contains internal vertebral venous plexus (5)
- vascular membrane (3)
- continues below as the filum terminale (3)
- widest space (4)
- attached to the foramen magnum (1 & 2)
- extends laterally as the ligamenta denticulata (3)

Unit (2)
Brain Stem
Medulla Oblongata

Complete:

- The pyramid is formed by ----- descending motor ----- fibers.
- The olive is produced by the ----- inferior olivary ----- nucleus.
- It is connected with the cerebellum by the ----- inferior cerebellar ----- peduncle.
- The nerve rootlets emerging between the pyramid & olive are those of the ----- hypoglossal ----- nerve.
- The nerve attached just above the pyramid is the ----- abducent ----- nerve.
- The back of the open medulla forms the floor of the ----- 4th ventricle -----
- The tubercles on the back of the closed medulla are called ----- gracile ----- & ----- cuneate ----- tubercles.
- The closed medulla is traversed by the ----- central ----- canal, while the open medulla is related to the ----- 4th ----- ventricle.
- The motor nucleus of the 9th, 10th & 11th nerves is called ----- nucleus ambiguus -----
- The nucleus that receives taste sensation is called ----- inferior Nucleus solitarius -----
- The 2 decussations in the medulla are called ----- motor ----- & ----- sensory ----- decussations.

Pons

True statements:

1. It lies in front of the 4th ventricle.
2. Its basilar part is continuous on each side with the middle cerebellar peduncle.
3. The basilar sulcus lodges the basilar artery.
4. The tegmental part contains the nuclei of the middle 4 cranial nerves.
5. The basilar part contains a large number of pontine nuclei.

Complete:

- The pons is connected with the cerebellum by the ----- middle cerebellar peduncle.
- The pons forms part of the floor of the ----- 4th ----- ventricle.
- The cranial nerve attached to the pons at its junction with the middle cerebellar peduncle is the ----- trigeminal ----- nerve.
- The facial colliculus is formed by the ----- nucleus of abducent & genu of facial nerve
- The pons contains 2 nuclei of the facial nerve called ----- motor ----- & ----- superior salivary
- The lemniscus that begins in the pons & carries hearing sensation is called ----- lateral lemniscus
- The lemniscus that carries sensation from the head is called ----- trigeminal ----- lemniscus.

Midbrain

True statements:

1. It is traversed by the cerebral aqueduct.
2. The tectum is formed by 2 superior & 2 inferior colliculi.
3. The cerebral peduncles are separated from each other by the posterior part of the interpeduncular fossa.
4. The substantia nigra is an extrapyramidal centre.
5. The red nucleus lies at the level of the superior colliculus.

Complete:

- The part of the midbrain behind the cerebral aqueduct is called tectum
- The midbrain is connected with the cerebellum by the Superior cerebellar peduncle peduncle.
- The cranial nerve attached to the front of the midbrain is the oculomotor nerve while that attached to its back is the trochlear nerve.
- The crus cerebri is related laterally to the optic tract & trochlear nerve.
- The arteries which run on the surface of the crus cerebri are posterior cerebral & superior cerebellar arteries.
- The middle 3/5 of the crus cerebri contains corticospinal & corticonuclear fibers.
- The red nucleus lies at the level of the superior ~~colliculi~~ colliculus.
- The decussation of superior cerebellar peduncles lies at the level of the inferior colliculus.

Unit (3)

Fourth Ventricle & Cerebellum

Fourth Ventricle

True statements:

1. It lies behind the pons and open medulla.
2. It is continuous above with the cerebral aqueduct.
3. The vestibular nuclei lie in the lateral angle of the floor.
4. The facial colliculus lies in the pontine part of the floor close to the midline.
5. It has 2 lateral recesses that open on each side by the foramen of Lushka (lateral aperture).
6. The inferior medullary velum is perforated by a median aperture called foramen of Magendi.
7. Its roof shows choroids plexuses which secrete C.S.F.
8. Obstruction of the median & lateral apertures leads to hydrocephalus.

Cerebellar Peduncles

Matching:

A) Cerebellar peduncles:

- | | | |
|----------------------|----------------------|--------------------|
| 1. superior peduncle | 2. inferior peduncle | 3. middle peduncle |
|----------------------|----------------------|--------------------|

B) Fibers within the peduncle:

- | | |
|--------------------------------------|--|
| - pontocerebellar fibers (3) | - dentatothalamic fibers (1) |
| - anterior spinocerebellar tract (1) | - posterior spinocerebellar fibers (2) |
| - cuneocerebellar fibers (2) | - olivocerebellar fibers (2) |

Cerebellum

Complete:

- The anterior lobe of the cerebellum is separated from the middle lobe by a V-shaped fissure called fissura prima
- The 2 hemispheres are connected together in the midline by a mass called vermis
- The inferior surface of the cerebellum is supplied by 2 arteries Anterior inferior cerebellar & Posterior inferior cerebellar arteries.
- The largest & most lateral nucleus within the cerebellar hemisphere is called dentate nucleus
- The middle lobe is connected with the cerebral cortex via Cortico-ponto-cerebellar pathway.

Unit (4)

Base of the Brain & Diencephalon

Interpeduncular Fossa

Complete:

- The fossa is bounded in front by the optic chiasma
- The fossa lodges an arterial anastomosis called circle of willis
- In the interpeduncular fossa the structure just behind the optic chiasma is called the tuber cinereum
- The 2 rounded swellings in the interpeduncular fossa are called mamillary bodies.
- The most posterior part of the interpeduncular fossa that is pierced by central branches of the posterior cerebral arteries is called post. perforated substance.

Optic chiasma

True statements:

1. It is the decussation of the nasal fibers of the optic nerves of both sides.
2. It is continuous behind with the optic tracts.
3. The beginning of the optic tract is related laterally to the anterior perforated substance,
4. The optic tract contains fibers from both eyes.
5. The optic tract ends in the lateral geniculate body which gives origin to the optic radiation.
6. The fibers in the optic tract carrying the light reflex end in the pretectal nucleus.

Thalamus

Complete:

- Its medial surface is related to the ~~lateral~~ ^{3rd} ventricle while its upper surface is related to the lateral ventricle.
- The axons of the posterior ventral nucleus of the thalamus end in post central gyrus.
- The posterior end of the thalamus is called pulvinar.
- Its lateral surface is related to the posterior limb of internal capsule.
- Its posterolateral ventral nucleus receives 2 lemnisci: medial & spinal.
- The posteromedial ventral nucleus receives trigeminal lemniscus.

Unit (5)

Cerebral Hemispheres

Lobes of cerebral hemispheres

Complete:

- The 2 cerebral hemispheres are connected together by a mass of commissural fibers called ----- Corpus Callosum -----
- The inferior surface of the cerebral hemisphere is divided into 2 parts: orbital -----
----- part ----- & ----- tentorial part -----
- The temporal pole lies in the ----- middle ----- cranial fossa.
- The longitudinal cerebral fissure contains the ----- anterior cerebral ----- arteries.
- The frontal lobe is separated from the parietal lobe by ----- central ----- sulcus.
- The temporal lobe is separated from the parietal lobe by ----- lateral ----- sulcus.

Superolateral surface of cerebral hemisphere

Complete:

- The central sulcus intervenes between the ----- Pre-Central ----- gyrus
& ----- post-central ----- gyrus.
- The artery that runs parallel to the central sulcus & lies one finger-breadth in front of it is called ----- frontal branch of middle meningeal -----
- The lateral sulcus lodges the ----- middle cerebral ----- artery.
- The part of the cerebral cortex that is buried in the bottom of the lateral sulcus is called ----- insula -----
- The central sulcus curves on the medial surface of the hemisphere where it ends into an area of the cortex called ----- para-central ----- lobule.

Medial surface of cerebral hemisphere

Complete:

- The gyrus that lies just above the corpus callosum is the cingulate
- The artery that runs above the corpus callosum is called ant. cerebral
- The paracentral lobule is the motor & sensory area for leg & penium parts of the body.
- The calcarine sulcus extends backwards from the splenium to reach occipital pole & lodges the post. cerebral artery.
- The gyrus that lies just below the calcarine sulcus is called lingual gyrus
- The area wedged between the calcarine sulcus & its parieto-occipital branch is called Cuneus
- The anterior end of the corpus callosum is called genu while its posterior end is called splenium
- The cavity below the corpus callosum is called lateral ventricle

Internal Capsule

Complete:

- It is continuous above with Corona radiata & below with Cus Cerebri
- It is supplied by Striate & middle & anterior cerebral arteries which arise from middle & anterior cerebral arteries.
- Hemorrhage in the internal capsule leads to contralateral hemiplegia
- Its anterior limb lies between lentiform nucleus & head of caudate
- Its genu contains Cortico nuclear fibers.
- Its posterior limb lies between lentiform nucleus & Thalamus
- Its retrolentiform part contains optic radiation.
- Its sublenticular part contains Audiotary radiation.

Unit (6)

Meninges & C.S.F.

Complete:

- The cranial dura mater consists of two layers that separate at certain sites to form the venous ----- Sinuses -----
- The CSF & large-sized vessels of the brain run in the ----- Subarachnoid ----- space.
- The arachnoid granulations project into ----- Superior sagittal ----- sinus to drain CSF into the venous blood.
- The CSF is secreted by the ----- Choroid ----- plexuses & drains finally into ----- Superior sagittal ----- sinus.
- The CSF leaves the lateral ventricle through ----- interventricular ----- "Monro" foramen to enter the ----- 3rd ----- ventricle.
- The CSF passes through a canal in the midbrain called ----- cerebral aqueduct -----
- The CSF leaves the 4th ventricle through ----- median ----- & ----- 2 lateral ----- apertures.
- Obstruction to the circulation of CSF leads to a condition called ----- hydrocephalus -----

Unit (7)

Arteries of the Brain

Matching:

A) Cerebral arteries:

1. fourth part of vertebral artery (2) basilar artery (3) anterior cerebral artery
(4) middle cerebral artery (5) posterior cerebral artery 6. internal carotid artery.

B) Course:

- passes through carotid canal ((6))
- passes through foramen magnum (1)
- lies on front of pons (2)
- runs above corpus callosum (3)
- runs in lateral sulcus (4)
- runs in calcarine sulcus (5)

Matching:

A) Cerebral arteries:

1. fourth part of vertebral artery 2. basilar artery 3. internal carotid artery

B) Branches:

- posterior communicating artery (3)
- spinal branches (1)
- posterior inferior cerebellar artery (2)
- superior cerebellar artery (2)
- labyrinthine (internal auditory) artery (2)
- anterior choroidal artery (3)

Matching:

A) Arteries of the brain:

1. anterior cerebral artery 2. middle cerebral artery 3. posterior cerebral artery
4. basilar artery 5. fourth part of vertebral artery

B) Distribution:

- paracentral lobule ()
- lingual gyrus ()
- pons (4)
- precentral gyrus ()
- occipital pole (3)
- temporal pole (2)
- medulla oblongata (5)
- cingulate gyrus ()
- superior temporal gyrus ()

Unit (8)

Nervous Pathways

Proprioception to cerebral cortex

Complete:

- The cells of origin of 1st order neurons of proprioception from the body lie in the ----- dorsal root ganglia -----
- The fasciculi in the spinal cord carrying proprioceptive sensation to the thalamus are --- ~~Posterior~~ gracile & Cuneate -----
- The sensory decussation lies in ----- medulla oblongata -----
- The medial lemniscus ends in ----- Postero lateral ventral ----- nucleus of thalamus.
- The sensory fibers arising in thalamus (3rd order neurons) form ----- Sup. thalamic ----- radiation that ends in the ----- post central ----- gyrus.
- The lemniscus carrying proprioceptive sensations from the head is called ----- trigeminal -----
- ----- lemniscus ----- & ends in the ----- post-med. ventral ----- nucleus of thalamus.

Proprioception to cerebellum:

Complete:

- The posterior spinocerebellar tract carries sensation from ----- trunk ----- & ----- lower limb -----
- The posterior spinocerebellar tract enters the cerebellum through the ----- inf. ----- Cerebellar ----- peduncle.
- The anterior spinocerebellar tract enters the cerebellum through the ----- Sup. ----- Cerebellar ----- peduncle.
- The cuneocerebellar fibers carries sensation from ----- upper limb -----
- The vestibulocerebellar fibers arise from the ----- vestibular division ----- ganglion & carry impulses of ----- equilibrium ----- from the labyrinth.

Pathway of pain

Complete:

- The cells of origin of 1st order neuron carrying pain from the body lie in dorsal root ganglia whose central processes form dorso lat. of Lissauer tract.
- The cells of 2nd order neurons of pain sensation lie in Substantia gelatinosa whose central processes cross the midline to form Lat. Spino thalamic tract.
- The spinal lemniscus ends in Postero lat. ventral nucleus of the thalamus.
- Pain from the face has cells of 1st order neurons in the trigeminal ganglion whose central processes form Spinal tract.
- The lemniscus carrying pain sensation from the face is called the trigeminal lemniscus.

Pyramidal tract

Complete:

- The pyramidal tract arises from pre central gyrus which lies in the frontal lobe of cerebral hemisphere.
- The pyramidal tract lies in the genu & post limb of internal capsule.
- In the midbrain, the tract lies in the Crus cerebri.
- In the pons, the tract lies in basilar part.
- In the medulla the tract lies in pyramids.
- In the spinal cord the pyramidal fibers form 2 tracts called Lat. Cortico spinal tract & ant. Cortico spinal tract.
- The cranial nerves lying in close contact with the pyramidal tract are: trochlear nerve in the midbrain, trigeminal nerve in the pons & hypoglossal nerve in the medulla oblongata.
- The pyramidal tract crosses in the motor decussation present in the medulla.
